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Electric Generation Expansion 1986-1991 Sheerness And Genesee Power Plants

May 1985

DDN 5493377

ERCB

Electric Generation Expansion 1986-1991

Sheerness And Genesee Power Plants

Report to the Lieutenant Governor in Council

With respect to an Energy Resources Conservation Board proceeding to amend Approval HE 8312 held by Alberta Power Limited and TransAlta Utilities Corporation and Approval HE 8320 held by The City of Edmonton.

May 1985

ENERGY RESOURCES CONSERVATION BOARD
DECISION REPORT SERIES

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D 83-H	Electric Generation Expansion 1985-1990 Sheerness and Genesee Power Plants – Decision Report

Report D 85-21 concerns

Proceeding 840837 initiated by the Energy Resources Conservation Board to review the commissioning dates of the Sheerness and Genesee generating units in the 1986-1991 period in light of events which occurred after the issuance of Decision Report D 83-H.

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1 BACKGROUND TO THE PROCEEDING AND HEARING

In the late 1970s the Board approved the construction of three new thermal electric plants in the province: Keephills, Sheerness, and Genesee. The Board's decisions were made in the public interest and based on the best available evidence at that time.

Two generating units have since been commissioned at the Keephills site, in 1983 and 1984, and construction of the Sheerness and Genesee plants is underway. One generating unit at Sheerness is almost completed and could start commercial operation as early as January 1986. The first unit at Genesee is under construction and could be completed in 1988. The remaining units at Sheerness and Genesee are in various stages of manufacture, delivery, and construction.

Since the initial approvals of the Sheerness and Genesee plants, conditions have drastically changed and the commissioning dates of the Sheerness and Genesee generating units have been the subject of two applications to the Board. The Board's decisions respecting these applications are contained in Decision Reports 82-C and D 83-H.

1.1 The Proceeding

This report discusses the Energy Resources Conservation Board proceeding to review the commissioning dates of the generating units in the Sheerness and Genesee power plants, as described in Approvals HE 8312 and HE 8320 respectively. The review arose out of the Board's December 1983 Decision Report D 83-H on the deferral of the Sheerness and Genesee power plants. In that report, the Board made certain observations regarding the risk that further erosion of load growth might require another review to defer the units from the dates specified in 1983. It requested the utilities to report back to it by the end of 1984 on optimization of the commissioning dates of the units, and stated that it expected further review would confirm if further action would be necessary.

In July 1984, the Electric Utility Planning Council (EUPC) issued an updated forecast which indicated significant expected decreases in future load growth rates to the year 2009. In August 1984, TransAlta Utilities Corporation (TransAlta) and Alberta Power Limited (Alberta Power) re-examined the timing of the Sheerness and Genesee units in light of the updated forecast and submitted a letter to the Board requesting a public hearing on the continuing construction of the power plants.

In September 1984, the Board called a public prehearing meeting to obtain the views of all parties who might be interested in the Sheerness and Genesee power projects. Based on the views expressed by the participants at that meeting, the Board decided to call a public hearing to consider appropriate commissioning dates for the Sheerness and Genesee generating units.

In October 1984, Board staff convened a meeting of all interested parties to discuss such matters as: the economic parameters to be used in the costs and benefits analyses, the detail of the information and any supporting evidence to be provided at the hearing, and the format of presentation. As a result of that meeting, Alberta Power, The City of Edmonton (Edmonton Power), and TransAlta prepared an information package of technical and economic data relating to the evaluation of thirteen sequences of generating unit additions. That package, referred to as the "Technical Information Package", was submitted jointly by the utilities to the hearing.

1.2 The Hearing: Participants

A public hearing to consider appropriate commissioning dates for the Sheerness and Genesee generating units was held in Edmonton during 22-25 January 1985 and on 30 January 1985, with V. Millard, C. J. Goodman, P.Eng., and F. J. Mink, P.Eng., sitting. Those who appeared at the hearing are listed in Table 1.

1.3 Summary of Suggested Expansion Sequences

At the hearing, the participants supported various generation sequences evaluated in the Technical Information Package and suggested that they be considered by the Board. Edmonton Power suggested an additional sequence which is a variation of sequence 9 of the Technical Information Package. All of the suggested sequences are shown in Table 2.

2 VIEWS OF THE PARTICIPANTS

2.1 The Electric Utility Planning Council

The EUPC presented its 1984 forecast of electric energy requirements to the year 2009. It concluded that none of the generating units in question would be required by their currently-approved commissioning dates to reliably meet this forecast, and identified the latest possible dates by which each unit would be required. The new sequence of latest possible dates was termed the maximum-deferral sequence (Sequence 3 in Table 2). The EUPC also provided estimates of the lifetime costs and revenue requirements associated with both the currently-approved sequence and the maximum-deferral case. The EUPC did not take a position with respect to the desirability of any particular sequence.

2.2 Alberta Power Limited

Alberta Power agreed that the Sheerness and Genesee units are not required by their currently-approved

TABLE 1 PARTICIPANTS AT THE HEARING

Principals and Representatives (Abbreviations used in Report)	Witnesses
Electric Utility Planning Council (EUPC) E. O. McAvity	G. Hanslip, P.Eng. of The City of Calgary J. Gunn, P.Eng. of Alberta Power W. Taylor and R. Valiant, P.Eng. of TransAlta
Alberta Power Limited (Alberta Power) J. C. Major, Q.C.	K. Provost, P.Eng. J. R. Frey, P.Eng. G. Lake, P.Eng.
TransAlta Utilities Corporation (TransAlta) M. H. Patterson, Q.C. W. G. Hopkins	W. L. Fraser, P.Eng. T. Crowe, P.Eng.
The City of Edmonton (Edmonton Power) J. W. Beames, Q.C. M. Sherk	E. F. Kyte, P.Eng. A. Pettican, P.Eng. R. Wright of Wright Mansell Research Ltd.
The City of Calgary (Calgary) R. F. Goss D. A. Larder	
The City of Lethbridge (Lethbridge) Alderman E. Martin	E. Martin
Industrial Power Consumers Association of Alberta (IPCAA) R. Curtis	B. W. Clark, C.A.
Fording Coal Limited (Fording) J. R. Smith, Q.C.	
Manalta Coal Limited (Manalta) D. A. Holgate	L. Portigal J. Decker, P.Eng. R. Shaneman
Luscar Limited (Luscar) M. MacDonald	D. Smith, P.Eng. K. Haddock, P.Eng.
Electrical Contractors Association of Alberta (ECAA) G. A. Soucy	G. A. Soucy
Energy and Chemical Workers Union R. Nielsen	R. Nielsen E. Coe
Southern Alberta Building and Construction Trades (Southern Alberta) P.R.J. Pittman	J. Briegel
Alberta & N.W.T. (District of (MacKenzie) Building & Construction Trades Council R. Garby	R. Garby J. Briegel
INTEG – Intercontinental Engineering Ltd. M. J. Smith, P.Eng.	M. J. Smith, P.Eng.

TABLE 1 (continued)

Principals and Representatives (Abbreviations used in Report)	Witnesses
Cana Construction Co. Ltd. J. D. Dunlop, P.Eng.	J. D. Dunlop, P.Eng.
The County of Leduc No. 25 E. J. Walter, Q.C.	K. Pinkowski
The Town of Hanna and District A. L. McLarty	S. Dookie A. Grover
The Town of Calmar G. McCartney	G. McCartney
The Village of Warburg D. Haggerty	D. Haggerty
The Village of Thorsby L. Bacsik	B. Senio
The Village of Breton J. D. Hilker	J. D. Hilker
Edmonton Economic Development Authority A. G. Bleiken	A. G. Bleiken
Battle River Regional Planning Commission G. Scerbak	G. Scerbak
Palliser Regional Planning Commission P. D. Fenwick	P. D. Fenwick
Alberta Wind Power Associates J. Otis	
Energy Resources Conservation Board staff (ERCB staff or Board staff) C.J.C. Page M. L. Asgar-Deen, P.Eng. F. Rahnama A. Kwaczek P. Wickel	

The City of Red Deer, The Alberta Union of Rural Electrification Associations, Stuart Olson Construction Ltd., Hanna and District Chamber of Commerce, Edmonton Chamber of Commerce, and William Arsene filed submissions but did not appear at the hearing.

The City of Calgary, Fording Coal Limited, and Alberta Wind Power Associates registered and participated at the hearing but submitted no direct evidence.

TABLE 2 SUMMARY OF SUGGESTED EXPANSION SEQUENCES

SEQUENCE NO.	1986	1987	1988	1989	1990	1991
1	BC/01,S1/01	S2/07	G2/06	G1/02	-	-
2	BC/01,S1/01	-	-	-	S2/07,G2/10	G1/10
3	BC/01	-	-	S1/10	S2/07,G2/10	G1/10
4	-	BC/09	G2/01	-	S1/07,G1/10	S2/10
5	-	G2/10	-	BC/09	S1/07,G1/10	S2/10
6	-	BC/09	G2/01	-	S1/07,S2/10	G1/10
7	S1/01	-	-	BC/09	S2/07,G2/10	G1/10
8	-	BC/09	-	S1/10	S2/07,G2/10	G1/10
9	S1/01	-	G2/01	S2/10	BC/09	G1/10
*9a	BC/01,S1/01	-	G2/01	S2/10	-	G1/10
10	S1/01	-	S2/01	G2/10	BC/09	G1/10
11	-	BC/09	S1/01	-	S2/07,G2/10	G1/10
12	-	S1/10	-	BC/09	S2/07,G2/10	G1/10
13	BC/01,S1/01	-	S2/01	G2/06	G1/02	-

NOTES:

1. BC/mm – B.C. Tie/commissioning month
   S1/mm – Sheerness 1/commissioning month
   S2/mm – Sheerness 2/commissioning month
   G2/mm – Genesee 2/commissioning month
   G1/mm – Genesee 1/commissioning month
2. Sequence No. 1 represents the currently-approved addition of generating units to the Alberta interconnected system.

* This sequence was not contained in the Technical Information Package. Information relating to this sequence was submitted by Edmonton Power at the hearing.

commissioning dates. The utility stated that Sheerness 2 and the Genesee units should be delayed as much as possible in order to minimize the lifetime costs and revenue requirements associated with them. It argued, however, that Sheerness 1 should not be deferred because virtually all costs associated with this unit have been expended and deferral of the unit would increase lifetime costs substantially. In addition, leaving the commissioning date for Sheerness 1 unchanged would allow for some savings in fuel costs in the operation of the Alberta Interconnected Electric System (AIS).

Alberta Power took the position that the first unit of the Genesee project should not precede the second unit of the Sheerness project but did not give reasons. It simply referred to the Board's own reasons for placing Sheerness ahead of Genesee given in the original decisions on these projects. It also supported the commissioning of the B.C. Tie on the currently-approved schedule because of the many benefits associated with an interconnection with B.C. Hydro and because the tie has potential as a low-cost source of energy.

2.3 TransAlta Utilities Corporation

TransAlta supported Alberta Power's position of deferring all units except Sheerness 1 because such a sequence would maximize the long-term savings to the power consumers of Alberta. TransAlta took the position that energy would be imported across the B.C. Tieline and in its analyses of lifetime costs and revenue requirements it assumed a 16-mills/kW.h price for this energy.

TransAlta also supported Alberta Power's position respecting the commissioning of the B.C. Tie and the ordering in sequence of the Sheerness and Genesee units.

2.4 Edmonton Power

Edmonton Power supported the currently-approved schedule of commissioning dates for the Sheerness and Genesee units on the grounds that this sequence provided economic stability and employment in the 1985-1986 period without increasing lifetime costs or revenue requirements. Thus it argued that the sequence satisfied the two primary criteria set out by that utility – economic stability and efficiency.

While the utility supported the existing schedule, it stated that, if the ERCB deemed some deferral necessary, it would support an alternate sequence (Sequence 9 in Table 2). This sequence would effectively put the first Genesee unit ahead of the second Sheerness unit. Edmonton Power argued that this sequence would also provide economic stability in the 1985-1986 period and would reduce both lifetime costs and revenue requirements. It also stated that it would support a variation of its alternate sequence that would not defer the commissioning of the B.C. Tie (Sequence 9a in Table 2).

2.5 The Cities of Calgary and Lethbridge

Calgary supported the maximum-deferral sequence. It argued that the primary consideration should be the need for the plants and that emphasis should be placed on the short-term savings to the consumer rather than the long-term costs. It stated that social goals and objectives should not be met through utility rates. Furthermore, the ERCB should give some consideration to the removal of what Calgary termed excess plant.

Calgary supported Alberta Power's position on the commissioning of the B.C. Tie and the ordering of the Sheerness and Genesee units. It saw no evidence to indicate that the order of the units should be altered.

Lethbridge supported the maximum deferral of the Sheerness Unit 2 and the Genesee units. It indicated that consumers are currently not in a position to easily absorb electricity rate increases, and that such increases should be delayed, if possible, to a time when the economy has improved and they can be more easily absorbed. It also stated that it opposed funding make-work projects through the electric utilities.

2.6 The Industrial Power Consumers Association of Alberta

IPCAA supported the position that the Sheerness and Genesee units should be deferred to the latest possible dates as identified by the EUPC (Sequence 3 in Table 2). It indicated that its primary concern was the short-term minimization of electricity costs to consumers in Alberta. An increase in costs to IPCAA's members could adversely affect their competitive position in the market place.

IPCAA also supported commissioning the B.C. Tie on its currently-approved schedule.

2.7 Coal Companies

Manalta indicated its support for keeping the current commissioning date for Sheerness 1. The firm has carried out a considerable portion of the work required to expand the Montgomery mine in order to supply coal to the unit. Expenditures have been delayed as long as possible but the firm finds it has no more flexibility relating to scheduling. A further delay of Sheerness 1 would impose hardship and inconvenience on Manalta, its employees, and its suppliers.

Luscar indicated its support of the deferral of Sheerness 2 to a date when it is required by the AIS on the understanding that the unit would precede Genesee 2. It stated that additional uncertainty should not be placed on the construction of Sheerness 2. The firm has undertaken considerable preliminary work in order to provide coal to Sheerness 2 but indicated that a further delay could be accommodated.

Fording indicated its support for the currently-approved schedule. However, if the ERCB deemed that some delay were necessary, the firm stated that it would support Edmonton Power's alternative sequence. Fording indicated that the monies expended by towns and construction firms would amount to lost capital if a further delay were ordered. The firm is of the opinion that such losses should be minimized. Fording also stated that electricity export possibilities should be vigorously pursued.

2.8 The Engineering and Construction Trades

INTEG, Stuart Olson Construction, Cana Construction, the Electrical Contractors Association, the Energy and Chemical Workers Union, and the Alberta & N.W.T. Building and Construction Trades Council all supported the currently-approved schedule for the construction of the Genesee Units 2 and 1. They stated that the project should go ahead as soon as possible in order to provide employment in the construction trades. These interveners contended that construction and labour costs are lower now than they will be in a few years, so a cost saving can be realized through early completion of the units. They expressed concerns that a further delay at this time could lead to a loss of expertise and skilled manpower due to people leaving the province or dropping out of the work force. The cost of repatriating these resources could be quite high, especially if job prospects were to improve elsewhere in the provincial economy at that time.

Identical concerns were expressed by both Southern Alberta and Alberta & N.W.T. Building and Construction Trades Councils in their positions in favour of the commissioning of Sheerness Unit 2 according to its presently-approved schedule. These councils were supported by Cana Construction.

The Alberta & N.W.T. Building and Construction Trades Council and its Southern Alberta counterpart stated that the B.C. Tie should be delayed. They indicated that one reason the construction of the plants can be delayed is because energy will be imported over the tie. If the tie were delayed, the energy would not be imported and the power plants could be built, thus preserving jobs in the province.

2.9 Counties, Towns, and Villages

The Villages of Warburg, Thorsby, and Breton and the County of Leduc No. 25 were in favour of commissioning the Genesee units according to the presently-approved schedule. They noted that the current residents are bearing the cost of the development of lots and recreational facilities and the expansion of local utility services, which were put in place in anticipation of the early completion of the units. These facilities are underutilized and associated revenues will not be realized until the start-up of the units. The county indicated that further delay might create additional expenses associated with road maintenance. Each intervener indicated that the business spin-offs and job opportunities for residents resulting from the construction of the units would be beneficial at this time.

The Town of Calmar supported this position as well, stating that underutilized infrastructure was also a problem for the town. While these developments were not undertaken specifically in anticipation of the Genesee project, commissioning of the units would help alleviate the problem.

Similar reasons were cited by the Town of Hanna and District in support of commissioning Sheerness Unit 1 in January of 1986. The town identified further benefits that would be realized from a secure water supply and irrigation spin-offs associated with the start-up of Sheerness 1. The town referred to an agreement with Alberta Environment for additional water supply and said that the agreed-to schedule would not be met if the Sheerness Unit 1 were delayed. A delay in the commissioning of the unit may delay these benefits and increase the cost of water to the town. The town was in favour of delaying the commissioning of Sheerness 2 and the Genesee units in order to reduce the cost of electricity to Alberta consumers.

2.10 Planning Commissions and Economic Development Authorities

The Palliser Regional Planning Commission supported the view that the first unit of the Genesee project should not precede the second unit of the Sheerness project. It also supported the position taken by the Town of Hanna and District.

3 DEFINITION OF THE ISSUES

After consideration of all evidence before it, the Board believes the relevant issues to be:

- the commissioning date for the B.C. Tieline,
- the generating capacity requirements and timing to provide adequate capacity and sufficient energy for loads on the Alberta interconnected system during the 1986-1991 period,
- the commissioning date for Sheerness Unit 1,
- the commissioning dates for Sheerness Unit 2 and Genesee Unit 2, and
- the commissioning date for Genesee Unit 1.

4 VIEWS OF THE BOARD

BASIS FOR CONSIDERATION

Having carefully considered all of the evidence, the Board believes that some unique circumstances apply to the determination of the commissioning dates for the Sheerness and Genesee units and that the decision should not be based on a single criterion but a combination of factors. Principal criteria are:

- the need for the Sheerness and Genesee units to reliably supply the projected electric load, and
- the lifetime costs of the expansion sequence.

Consideration should also be given to:

- the impact on electric consumers,
- the impact on communities, and
- the impact on the economy.

Furthermore, the Board believes that concerns regarding the B.C. Tie should be resolved prior to determining the need for generating units to reliably meet the load in the 1986-1991 period.

The Board accepts the 1984 EUPC forecast of energy and peak demand and the EUPC's capacity- and energy-planning criteria as a basis for determining the need for generating capacity to reliably meet the projected demand for the 1986-1991 period. However, it also believes that in light of recent events, such as the stimulus of the economy due to the Western Accord and expansion of oil sands developments, the current EUPC forecast of demand may prove to be on the low side. Therefore, it believes that the final determination of the need for generating units in the 1986-1991 period should give some recognition to the possibility of a higher forecast.

The Board believes that the lifetime cost of the final expansion sequence chosen should be minimized to the extent possible. It also believes that the impact on the consumers of electricity is an important consideration, and that the evaluation of revenue requirements associated with the chosen expansion sequence is an appropriate assessment of this impact. In this regard, minimization of the short-term cost to the consumers should be given more weight than the longer-term impact. The Board subscribes to the submissions at the hearing that power costs to the consumer should be minimized in the short run to allow full economic recovery and believes that longer term increases will be buffered by an increase in the number of customers as the economy recovers from the recent recession.

4.1 The B.C. Tie: Commissioning Date and Tieline Energy

Approval of the B.C. Tieline was issued by the Board in 1980. Construction is in the final stages, with completion scheduled for late 1985. TransAlta's evidence indicated that virtually all of the construction costs are fully committed and any deferral of the commissioning date would not reduce or delay expenditures. While the commissioning date for the B.C. Tieline was not in question when the Board convened the hearing, it became an issue because of its potential impact on the need for capacity to meet the projected load. Consequently, some of the generation sequences presented in the Technical Information Package assumed a commissioning date other than January 1986.

The Board accepts that, if consideration were given only to meeting the load forecast, the B.C. Tieline could be deferred beyond its currently-approved commissioning date. However, deferral would not reduce lifetime costs and thereby provide any cost benefit to the consumer. In fact, deferral would actually lead to increased costs. For example, deferral would preclude the purchase of economy energy that could reduce the total cost of energy to consumers by displacing more expensive energy in the Alberta system. The B.C. Tieline will provide additional advantages, such as greater reliability in supplying the loads in southern Alberta, which would have greater importance with any deferral of units at the Sheerness site.

In the Board's view the advantages of commissioning the B.C. Tieline in accordance with the current schedule far outweigh any disadvantages. Accordingly, the Board concludes that the B.C. Tieline should be commissioned as scheduled in January 1986.

There were signficant differences in the views of several participants respecting the degree to which the B.C. Tieline would be utilized and the price of any energy imported over it. TransAlta contended that B.C. Hydro will have significant excess generating capacity for several years which will be available at favourable prices. It provided evidence of 1984 purchases at 12 and 18 mills/kW.h and, in estimating the lifetime costs and revenue requirements for the various generating sequences, it assumed a purchase price of 16 mills/kW.h. Edmonton Power contended that there was no assurance that there would be excess capacity in British Columbia but, in any event, other prospective purchasers would also be interested in purchasing that energy and consequently, the price could be expected to be higher. It used a cost equivalent to gas-fired energy in estimating costs and revenues for the generation sequences.

Although there was only limited evidence as to the availability of energy from B.C. Hydro, the Board agrees that the current excess capacity situation is likely to continue into the 1990s and that purchases are likely to be at favourable prices. Accordingly, it assumed that the purchase price of energy would be 16 mills/kW.h for 1984. Prices in other years were assumed to escalate at the rate of inflation. It also adopted yearly energy imports consistent with those assumed by the utilities in the Technical Information Package.

4.2 Generating Capacity Requirements for the 1986-1991 Period

Figure 1 shows the relationship between the peak load estimated in the 1984 EUPC forecast and the load carrying capability (LCC) of the interconnected system for four generation expansion sequences.

(1) Presently-approved sequence:
The presently approved commissioning dates for the four Sheerness and Genesee units;

(2) Maximum-deferral sequence:
Commissioning dates that would be consistent with the maximum deferral of the four generating units;

(3) Sequence A:
Same as maximum-deferral sequence but with the first unit advanced from 1989 to 1988;

(4) Sequence B:
Same as Sequence A but with the second unit advanced from 1990 to 1989.

The presently-approved sequence would result in substantial surplus load carrying capability (SLCC) until 1992. The maximum-deferral sequence would essentially eliminate the SLCC in 1988 and in 1989. Sequence A would increase the SLCC in 1988 but only marginally in 1989. Sequence B would increase the SLCC in both 1988 and 1989.

The Board believes that the presently-approved sequence would result in too much surplus capacity. It has considered which of the three alternatives (maximum deferral, Sequence A, or Sequence B) best meets the needs of Alberta consumers, having regard only for reliability considerations expressed as LCC. Costs and other factors related to each of these alternatives are considered in later sections that address the timing of specific generating units.

As illustrated in Figure 1, the maximum-deferral alternative would minimize SLCC and result in system LCCs that are virtually the same as the estimated peak loads in 1988 and 1989, but in 1990 and subsequent years the LCC would be significantly greater than the estimated peak load. The Board is concerned that as a result of recent developments, such as the new energy agreement between the federal and provincial governments and the rapidly expanding oil sands developments, the 1984 forecast may prove to be on the low side. In addition, should developments demonstrate that the 1984 load forecast was indeed too low there might not be sufficient time to advance the commissioning date of the next units, or to do so would result in signficant cost increases. Having regard for these factors, the Board believes it prudent to ensure more load carrying capability in 1988 and 1989 which, as shown in Figure 1, would be compatible with the maximum-deferral sequence for 1990 and subsequent years. Therefore, the Board believes the adoption of the maximum-deferral sequence for 1988 and 1989 would not be in the public interest.

Keeping these concerns in mind, the Board believes Sequence A would provide a reasonable margin between LCC and peak load in 1988 but would not do so in 1989. Sequence B, however, would provide a reasonable balance in both years and is the alternative that would best meet the expected loads in 1988 and beyond.

4.3 The Commissioning Date of Sheerness Unit 1

As explained in the foregoing assessment of generation requirements, the Board concludes that the next unit should be commissioned no later than 1988.

Evidence at the hearing indicated that construction of Sheerness 1 is virtually complete and almost all costs have already been incurred. Deferring its currently-approved commissioning date of January 1986 would increase the lifetime cost of the unit paid by Alberta consumers. The additional cost would be due to mothballing the plant and the higher system generation costs that would occur during that period because older and less efficient units would have to operate. The evidence shows that the additional lifetime cost of deferring Sheerness 1 from January 1986 to January 1989 would be $49 million (present worth) and the Board believes that commissioning the unit in 1988 would have a similar additional lifetime cost. In view of the higher costs, the Board can see no advantage in deferring the commissioning date until 1988 and concludes that it would be prudent to avoid the cost and commission the unit as presently scheduled, in January 1986.

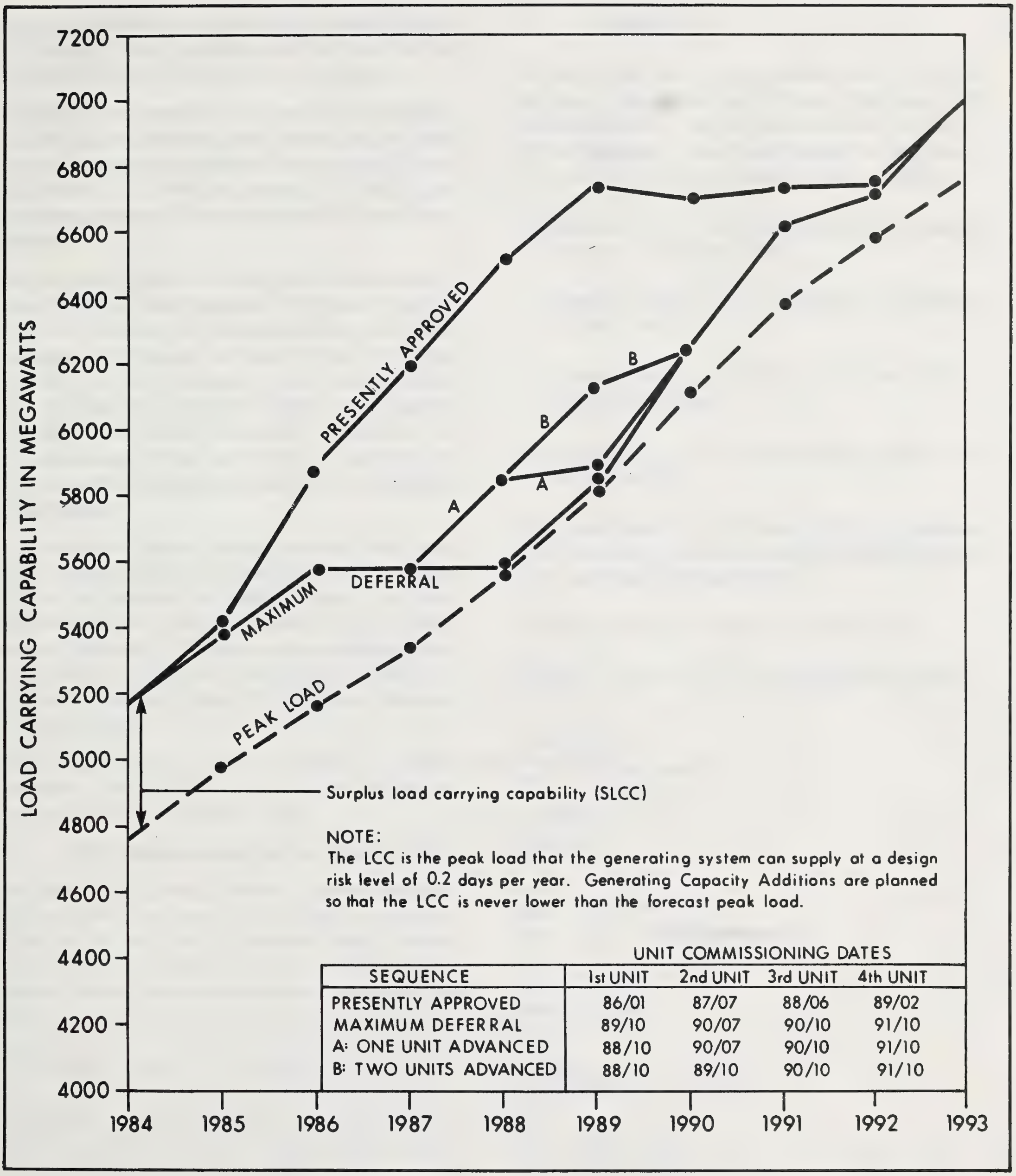
This decision provides the additional advantage of relieving concerns expressed by the Town of Hanna regarding its water supply.

4.4 The Commissioning Date for Sheerness 2 and Genesee 2

Based on its assessment of need as described under section 4.2, the Board is of the view that one unit should be commissioned in 1989 and another in 1990. These units should be Sheerness 2 and Genesee 2.

Using the evidence presented, the Board analysed the impact on lifetime costs and the corresponding impact on the consumer resulting from commissioning Sheerness 2 ahead of Genesee 2 and vice versa. The Board's analysis, as well as the evidence by Edmonton Power at the hearing, show that commissioning Genesee 2 in advance of Sheerness 2 results in total lifetime costs that would be some $4 million (present worth) lower in spite of the fact that the capital cost of Genesee 2 is significantly greater than that of Sheerness 2. This somewhat surprising result is due to the fact that substantial expenditures have been made on the Genesee unit in order to meet the previously-approved commissioning date of June 1988, while relatively fewer expenditures have been made on Sheerness 2.

The Board also examined the impact of the two sequences on short-run costs to the consumer and found no impact prior to 1989. If the Sheerness unit is commissioned first, its cost will enter the rate base in 1989, and the dollars already expended on Genesee 2 will accumulate interest charges for one more full year prior to its entering the rate base in 1990. If Genesee 2 is commissioned first, capital charges would accrue for an additional year on the monies expended on Sheerness 2. Given that the cost of the Genesee unit is substantially larger than the cost of Sheerness 2, one year's accumulation of interest would be larger for Genesee 2. Consequently, the cost to the consumer in the 1989-1990 period



NOTE:
The LCC is the peak load that the generating system can supply at a design risk level of 0.2 days per year. Generating Capacity Additions are planned so that the LCC is never lower than the forecast peak load.

SEQUENCE	UNIT COMMISSIONING DATES			
	1st UNIT	2nd UNIT	3rd UNIT	4th UNIT
PRESENTLY APPROVED	86/01	87/07	88/06	89/02
MAXIMUM DEFERRAL	89/10	90/07	90/10	91/10
A: ONE UNIT ADVANCED	88/10	90/07	90/10	91/10
B: TWO UNITS ADVANCED	88/10	89/10	90/10	91/10

FIGURE 1 THE PROJECTED LOAD CARRYING CAPABILITY (LCC) OF THE ALBERTA INTERCONNECTED ELECTRIC SYSTEM (AIS) FOR VARIOUS UNIT COMMISSIONING DATES RELATIVE TO MAXIMUM DEFERRAL.

in terms of additions to the rate base would be lower if Genesee 2 were commissioned first and did not accumulate interest charges for an additional year.

The Board also considered the concerns expressed by the communities surrounding the Genesee project. These concerns would not be addressed by the commissioning of Sheerness 2 in 1989 and Genesee 2 in 1990. Commissioning Genesee 2 first would partially alleviate these concerns.

The final factor in the Board's analysis concerns employment. While the funds remaining to be spent on the two units may be similar, the timing and manpower profile associated with the units are quite different. The Board is of the view that Genesee 2 would have a greater positive impact on employment in the pre-commissioning phase than would Sheerness 2. Therefore, the commissioning of Genesee 2 first would partially alleviate some of the employment concerns expressed at the hearing.

In summary, the Board's primary concerns, after need, are the minimization of lifetime costs and short-term costs to the consumer. Its analysis indicates that these objectives are best served by commissioning Genesee 2 prior to Sheerness 2. Employment and community concerns reinforce this decision. Therefore, the Board is of the view that Genesee 2 should be the unit commissioned in October 1989.

With adequate load carrying capability for 1989, Sheerness Unit 2 should be commissioned when it is required, which is in October 1990.

4.5 The Commissioning Date for Genesee Unit 1

As illustrated in Figure 1, this unit is not required until 1991, and the Board notes that the load carrying capability in 1990 and 1991 is signficantly higher than the forecast peak load, thereby providing a buffer against a higher forecast. Most of the evidence presented at the hearing indicated that the deferral of units until they are required generally reduces the lifetime costs associated with the entire project, and will minimize increases in revenue requirements to the consumer in the short run. Consequently, the Board is of the view that the commissioning of Genesee Unit 1 should be in October 1991, when it will be required on the AIS.

5 DECISION

Having regard for its responsibilities under the Act and its views expressed herein, the Board is prepared, with the authorization of the Lieutenant Governor in Council, to issue approvals to confirm and amend the commissioning dates for the four generating units as follows:

(a) Sheerness Unit 1 to be commissioned as presently approved in January 1986,

(b) Sheerness Unit 2 to be deferred from July 1987 to October 1990,

(c) Genesee Unit 2 to be deferred from June 1988 to October 1989, and

(d) Genesee Unit 1 to be deferred from February 1989 to October 1991.

The orders would be of the form set out in Appendices A and B of this report, and would be subject to the terms and conditions contained therein.

DATED at Calgary, Alberta, on 15 May 1985.

ENERGY RESOURCES CONSERVATION BOARD

V. Millard
Chairman

C. J. Goodman

C. J. Goodman, P.Eng.
Board Member

F. J. Mink, P.Eng.
Acting Board Member

APPENDIX A
FORM OF APPROVAL*

THE PROVINCE OF ALBERTA

HYDRO AND ELECTRIC ENERGY ACT

ENERGY RESOURCES CONSERVATION BOARD

IN THE MATTER of a power plant
of Alberta Power Limited and
TransAlta Utilities Corporation
in the Sheerness area

APPROVAL NO. HE

WHEREAS Alberta Power Limited and TransAlta Utilities Corporation are the holders of Approval No. HE 8312 authorizing the construction and operation of the Sheerness power plant; and

WHEREAS the Energy Resources Conservation Board convened a public hearing to consider the most appropriate commissioning dates for Sheerness generating units 1 and 2; and

WHEREAS the Board has determined that it is appropriate to commission Sheerness Unit 1 as scheduled and defer the commissioning date of Sheerness Unit 2, subject to the conditions herein contained; and

WHEREAS the Minister of the Environment has given his approval, hereto attached, insofar as matters of the environment are concerned; and

WHEREAS the Board deems it desirable to revise and consolidate Approval No. HE 8312.

THEREFORE, the Energy Resources Conservation Board, pursuant to the Hydro and Electric Energy Act, being chapter H-13 of the Revised Statutes of Alberta, 1980, and the Lieutenant Governor in Council having given his authorization by Order in Council, numbered O.C.____________/85 and dated ________________________ 1985, hereby orders as follows:

1. The construction and operation by Alberta Power Limited and TransAlta Utilities Corporation (hereinafter called "the Operator") of the Sheerness power plant and associated facilities located in the Sheerness area, is approved, subject to the terms and conditions herein contained.

2. The power plant and associated facilities shall be located as generally shown on the site plan, hereto attached as Appendix A.

3. Subject to the other provisions of this approval, the power plant shall be constructed and operated in accordance with

   (a) Application No. 9759 by Alberta Power Limited to the Board dated 2 November 1976 and supplementary information and evidence given in support of the application at a hearing on 16 May 1978,

   (b) Application No. 790606 by Alberta Power Limited to the Board dated 5 September 1979,

   (c) Application No. 830702 by Alberta Power Limited to the Board dated 20 July 1983,

   (d) Application No. 830799 by the Operator to the Board dated 22 August 1983 and supplementary information and evidence given in support of the application at a hearing on 28 September 1983, and

   (e) Board Proceeding No. 840837 and information and evidence given at a hearing on 22 January 1985.

4. (1) The power plant shall consist of two units, each of 400-megawatts nominal capacity.

(2) The units shall be commissioned such that Unit 1 is available to the system on 1 January 1986 and Unit 2 is available on 1 October 1990, unless the Board otherwise stipulates.

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* This is only a form of approval. The approval, when issued, may have minor variations from that set out here.

5. (1) The cooling pond required for units 1 and 2 shall be located as generally shown in Appendix A.

(2) The cooling pond shall be operated to a full supply level of 802.7 metres above sea level.

(3) The cooling pond shall be provided with make-up pumphouse and pipeline facilities from the Red Deer River to the plant site as generally shown in Appendix B hereto attached.

(4) The blowdown control structure, pipeline and related facilities shall be located as generally shown in Appendix B.

6. Ash from the power plant shall be disposed of in worked-out sections of the coal mine located east of the power plant.

7. Notwithstanding the foregoing provisions, the permitted area of the power plant and related facilities shall include Sections 31, 32 and the West half of Section 33 in Township 28 and Sections 5 and 6 in Township 29, all in Range 13, West of the 4th Meridian, or as otherwise stipulated by the Board.

8. (1) Not later than 31 December 1985, the Operator shall provide to the Board a complete revised schedule for Sheerness 2, covering planning, design, construction and commissioning phases, and showing all key dates in the schedule.

(2) The Operator shall submit to the Board quarterly progress reports for Sheerness units 1 and 2. Any major deviation from the respective schedules for Sheerness units 1 and 2 shall be indicated.

(3) The Operator shall notify the Board in writing within one month upon the commissioning of each unit.

9. (1) Insofar as it pertains to matters of the environment, this application is subject to the approval of the Minister of the Environment.

(2) The approval of the Minister of the Environment, in accordance with subclause (1), is attached hereto as Appendix C, and this approval is subject to the terms and conditions therein contained.

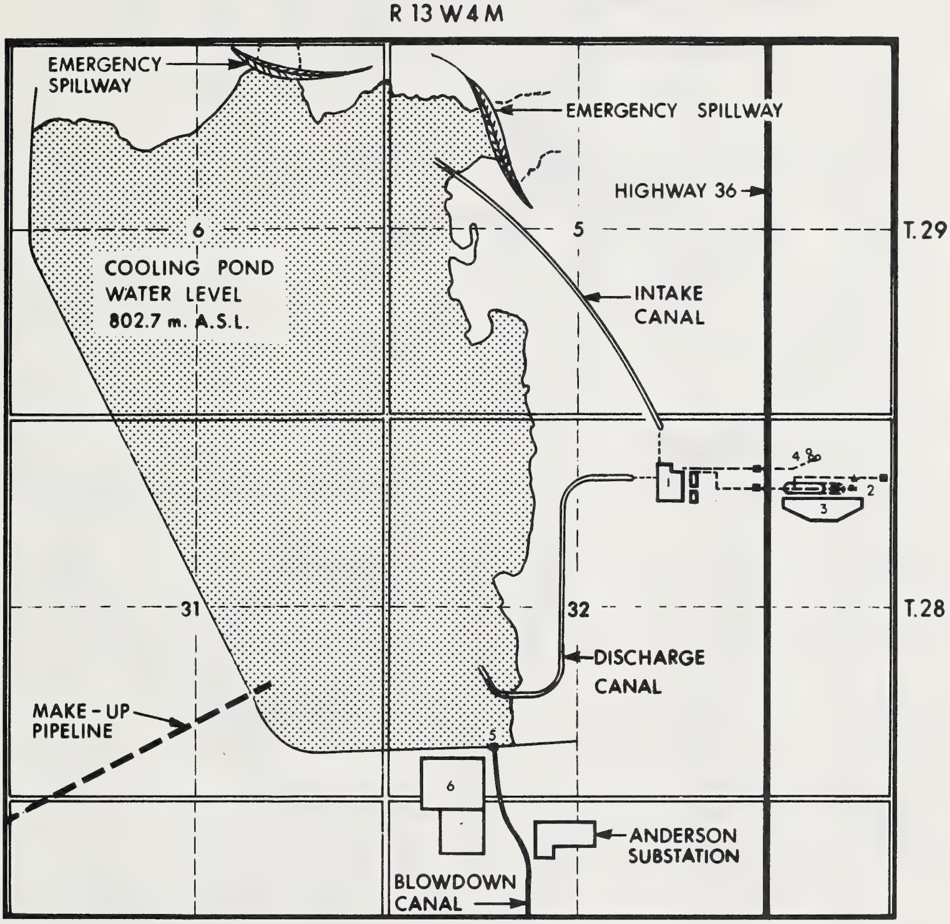
10. (1) Attached hereto as Appendix D, and made part of this approval, is the Order of the Lieutenant Governor in Council authorizing the granting of this approval.

(2) This approval is subject to the terms and conditions, if any, prescribed by the Order of the Lieutenant Governor in Council, as set out in Appendix D.

11. Approval No. HE 8312 is rescinded.

MADE at the City of Calgary, in the Province of Alberta, this day of 1985.

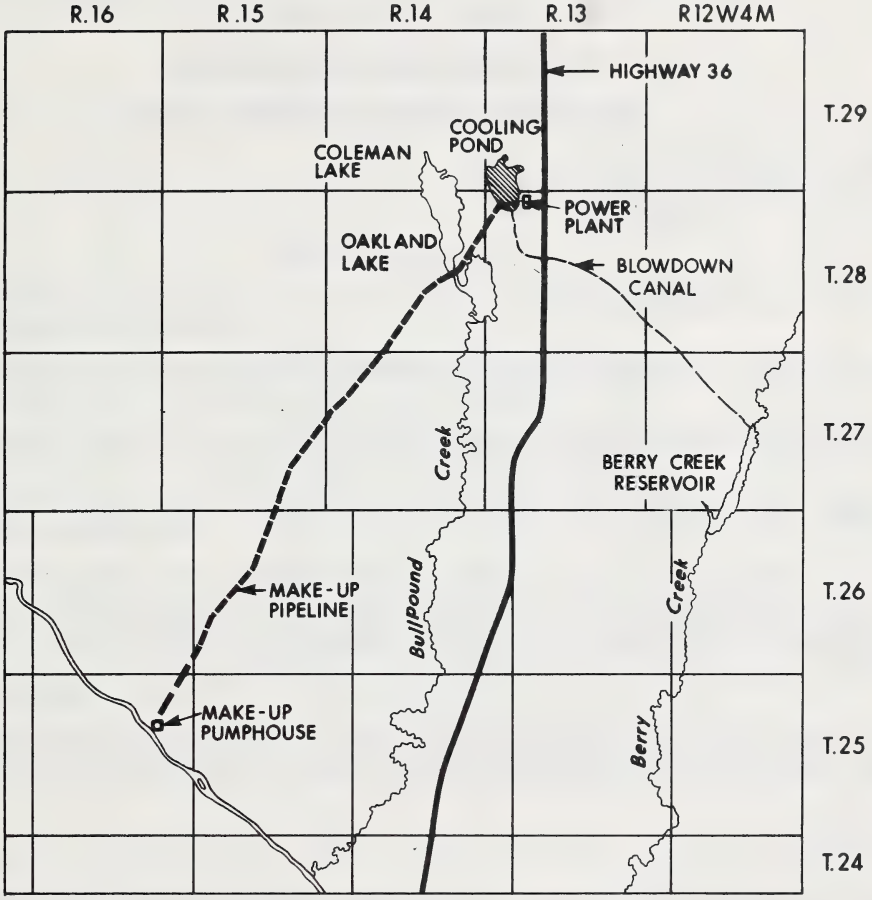
ENERGY RESOURCES CONSERVATION BOARD



APPENDIX A TO APPROVAL NO. HE
SHEERNESS POWER PLANT AND FACILITIES
PREVIOUS APPROVAL NO. HE 8312

LEGEND

1. POWER PLANT
2. COAL HANDLING PLANT
3. COAL STORAGE PILE
4. ASH HANDLING PLANT
5. BLOWDOWN CONTROL STRUCTURE
6. SEWAGE LAGOON



APPENDIX B TO APPROVAL NO. HE
COOLING POND MAKE-UP & BLOWDOWN FACILITIES
PREVIOUS APPROVAL NO. HE 8312

APPENDIX B
FORM OF APPROVAL*

THE PROVINCE OF ALBERTA

HYDRO AND ELECTRIC ENERGY ACT

ENERGY RESOURCES CONSERVATION BOARD

IN THE MATTER of a power plant
of The City of Edmonton in the
Genesee area

APPROVAL NO. HE

WHEREAS The City of Edmonton is the holder of Approval No. HE 8320 authorizing the construction and operation of the Genesee power plant; and

WHEREAS the Energy Resources Conservation Board convened a public hearing to consider the most appropriate commissioning dates for Genesee generating units 1 and 2; and

WHEREAS the Board has determined that it would be appropriate to defer the commissioning dates for the Genesee generating units 1 and 2, subject to the conditions herein contained; and

WHEREAS the Minister of the Environment has given his approval, hereto attached, insofar as matters of the environment are concerned; and

WHEREAS the Board deems it desirable to revise and consolidate Approval No. HE 8320.

THEREFORE, the Energy Resources Conservation Board, pursuant to the Hydro and Electric Energy Act, being chapter H-13 of the Revised Statutes of Alberta, 1980, and the Lieutenant Governor in Council having given his authorization by Order in Council, numbered O.C.____________/85 and dated__________________________ 1985, hereby orders as follows:

1. The construction and operation by The City of Edmonton (hereinafter called "the Operator") of the Genesee power plant and associated facilities located in the Genesee area, is approved, subject to the terms and conditions herein contained.

2. Subject to the other provisions of this approval, the power plant shall be constructed and operated in accordance with

   (a) Application No. 780024 by the Operator to the Board dated 12 January 1978 and supplementary information and evidence given in support of the application at a hearing on 25 July 1978,

   (b) Application No. 810683 by the Operator to the Board dated 20 September 1981 and supplementary information and evidence given in support of the application at a hearing on 25 November 1981,

   (c) Application No. 821000 by the Operator to the Board dated 18 October 1982,

   (d) Application No. 830799 by Alberta Power Limited to the Board dated 22 August 1983 and supplementary information and evidence given in support of the application at a hearing on 28 September 1983, and

   (e) Board Proceeding No. 840837 and information and evidence given at a hearing on 22 January 1985.

3. (1) The power plant shall consist of two units, each of 400-megawatts nominal capacity.

(2) The units shall be commissioned such that Unit 2 is available to the system on 1 October 1989 and Unit 1 is available on 1 October 1991, unless the Board otherwise stipulates.

4. The power plant and related facilities shall be located as generally shown on the attachment to this approval, marked Appendix A.

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* This is only a form of approval. The approval, when issued, may have minor variations from that set out here.

5. The power plant shall be cooled by a cooling pond constructed in accordance with the following provisions:

(1) The cooling pond shall be located as generally shown in Appendix A, or as otherwise stipulated by the Board.

(2) The cooling pond shall be designed for and operated at a maximum full supply level of 731.5 metres above sea level.

(3) The Operator shall maintain a buffer zone around the cooling pond.

(4) The buffer zone required by subclause (3) shall extend not less than 10 metres measured horizontally from the cooling pond shoreline at the full supply level.

(5) The cooling pond shall be provided with independent make-up and blowdown pipeline facilities from the North Saskatchewan River to the plant site. The pipelines shall be located generally as shown on Appendix A on a right of way not to exceed 30 metres in width, or as otherwise stipulated by the Board.

6. (1) Ash from the power plant shall be disposed of in worked-out sections of the coal mine.

(2) Until such time as the mine can accept ash from the power plant, a temporary ash disposal area may be used.

(3) The temporary ash disposal area required for disposal of ash shall be located as generally shown in Appendix A, or as otherwise stipulated by the Board.

(4) The Operator shall, in consultation with the Department of the Environment, investigate means of salvaging topsoil for use in reclamation of the temporary ash disposal area.

7. Notwithstanding the foregoing provisions, the permitted area of the power plant and related facilities shall include Sections 22 to 27 inclusive and the South halves of Sections 34 and 35, all in Township 50, Range 3, West of the 5th Meridian, or as otherwise stipulated by the Board.

8. (1) Not later than 31 December 1985, the Operator shall provide to the Board a complete revised project schedule for the plant covering planning, design, construction and commissioning phases, and showing all key dates in the schedule.

(2) The Operator shall submit to the Board quarterly progress reports indicating any major deviation from the schedule which may cause a delay in the in-service dates of the generating units.

(3) The Operator shall notify the Board in writing within one month upon the commissioning of each unit.

9. (1) Insofar as it pertains to matters of the environment, this application is subject to the approval of the Minister of the Environment.

(2) The approval of the Minister of the Environment, in accordance with subclause (1), is attached hereto as Appendix B, and this approval is subject to the terms and conditions therein contained.

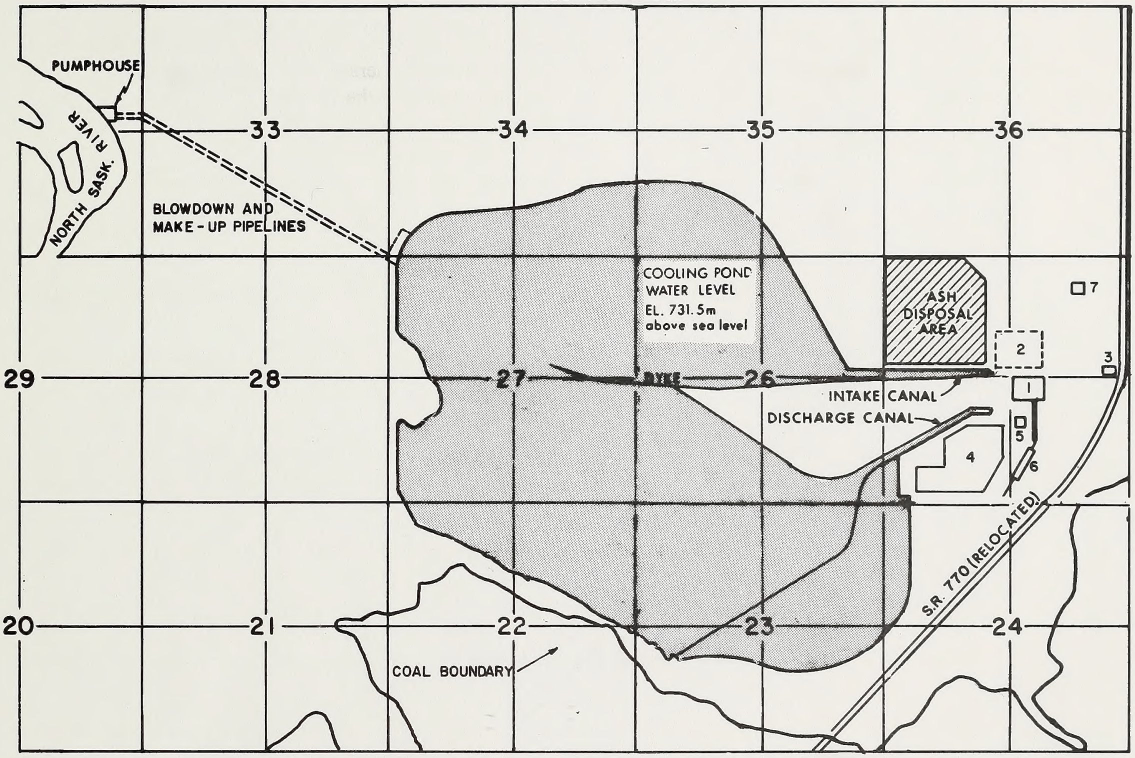
10. (1) Attached hereto as Appendix C, and made part of this approval, is the Order of the Lieutenant Governor in Council authorizing the granting of this approval.

(2) This approval is subject to the terms and conditions, if any, prescribed by the Order of the Lieutenant Governor in Council, as set out in Appendix C.

11. Approval No. HE 8320 is rescinded.

MADE at the City of Calgary, in the Province of Alberta, this day of 1985.

ENERGY RESOURCES CONSERVATION BOARD



APPENDIX A TO APPROVAL NO. HE

GENESEE POWER PLANT AND FACILITIES

PREVIOUS APPROVAL NO. HE 8320

LEGEND

1. POWER PLANT
2. SWITCHYARD (PROPOSED)
3. STATION PARKING
4. WASTE POND
5. ASH HANDLING
6. COAL HANDLING PLANT
7. WATER RESERVOIR

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